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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,015	07/31/2003	Elena Pavlovskaja	018563-002920US	4730
46718	7590	01/22/2009		
TOWNSEND AND TOWNSEND AND CREW, LLP (018563)			EXAMINER	
TWO EMBARCADERO CENTER, EIGHTH FLOOR			PATEL, YOGESH P	
SAN FRANCISCO, CA 94111-3834				
		ART UNIT	PAPER NUMBER	
		3732		
		MAIL DATE	DELIVERY MODE	
		01/22/2009	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/633,015

**Applicant(s)**

PAVLOVSKAIA ET AL.

**Examiner**

YOGESH PATEL

**Art Unit**

3732

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 and 37-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 and 37-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Interview summary**

The examiner initiated a phone interview with Michael Rosato on 01/09/2009 to discuss claim 1 and to further understand Applicant's invention.

### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for "a handle to adjust each orientation of the cutting shape" as recited in claim 18. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Same applied to claim 1 for "closed cutting surface" and "volume greater than the volume of the crown of the tooth."

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. No support found for the claimed limitation(s) "closed cutting surfaces" as in at least claims 1, 21, 22, 23, 24, 26, 37, 38 and 39. Same applies to claim 18 for "a handle to adjust each orientation of the cutting shape."

Furthermore, no support found the limitation "the crown portion of the closed cutting surface comprises a volume greater than the volume of the crown of the tooth."

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by "closed cutting surfaces." According to figure 6, it appears that the cutting surface 304 (e.g. rim or gingival curve) is not a closed surface. Furthermore, it is not clear how is meant by "the crown portion of the closed cutting surface comprises a volume greater than the volume of the crown of the tooth."

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-7, 10-12, 14-17, 21-22, 24-28, 30-31, 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva et al. (6,250,918) in view of Liang et al. (6,606,091).

Sachdeva discloses a dental method including 3D digital model and 3D movement path for orthodontic structure (fig. 1A-3C). Sachdeva shows a tooth having a crown portion and a root portion. Sachdeva is silent about separating gingiva from a tooth.

Liang teaches a system for interactive 3D object extraction from slice-base medical images including a 3D cutting surface (fig. 2). The examiner notes that the crown portions generally have a larger volume than other portion of the tooth (e.g. root portion). Liang teaches 3D solid for volume visualization or masking out of the undesirable parts of the data set (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Sachdeva by providing a method step for providing extraction of unwanted data (e.g. gum line or other unwanted structures) as taught by Liang in order to obtain a clear tooth structure so that it can be used for aligning or proper tooth occlusion. Further, it would have been obvious to one of ordinary skill in the art to find a line to separate unwanted structure, such as gum from a desired structure. Regarding claim 21, little or no patentable weight is given to functional language (e.g. defining 3D closed cutting surface...; and applying the cutting surface...) since it recites no structure. The system/computer of Sachdeva/Liang is capable of performing the desired function. Furthermore, the computer program of Liang is capable of performing the function as claimed.

Claims 4-5, 8-9, 13, 23, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva in view of Liange as applied to claim 1 above, and further in view of Andreiko et al. (5,431,562).

Sachdeva/Liange discloses the invention substantially as claimed except for how the cutting surface is being expressed.

Andreiko teaches a spline and parabolic function for curve. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Sachdeva/Liange by providing a spline and parabolic function as taught by Andreiko in order to obtain a smooth curvature for cutting surfaces. Further, it would have been matter of design choice to use alternative functions such as quadratic function for obtaining desired cutting curve. Further, Liange discloses highlighting a boundary of the region of the interest (col. 9, lines 17-38 and fig. 13A-B).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva in view of Liange as applied to claim 1 above, and further in view of Ernst (6,402,707). Sachdeva/Liange discloses the invention substantially as claimed except for a cylindrical coordinate system.

Ernst teaches cylindrical coordinate system (col. 12, lines 41-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Sachdeva/Liange by providing a cylindrical coordinate system as taught by Ernst for defining reference coordinate system.

***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH PATEL whose telephone number is (571)270-3646. The examiner can normally be reached on 8:00 to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cris Rodriguez can be reached on 571-272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YOGESH PATEL/  
Examiner, Art Unit 3732

/Ralph A. Lewis/  
Primary Examiner, Art Unit 3732



